

UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
PSC Box 20041
Camp Lejeune, North Carolina 28542-0041

AQM 6301

STUDENT OUTLINE

INTRODUCTION TO PRINCIPLES OF
AUTOMOTIVE MECHANICS INSTRUCTIONAL MODULE

LEARNING OBJECTIVES: Learning objectives are not specified for this lesson; however, content is regulated to explain:

1. Purpose, scope and broad objectives of the instructional module.
2. Location of the work stations, toolroom, break areas, and toilet facilities.
3. Policies pertaining to safety, depleted uranium hazard awareness, fire prevention, tool issue/recovery, rest breaks and smoking privileges.

OUTLINE:

1. MODULE OVERVIEW

a. Again, welcome to Principles of Automotive Mechanics Instructional Module.

b. First, I would like to introduce each instructor that will be involved with your training in this instructional module.

(1) As instructors, we are responsible to teach you principles of automotive mechanics. As students, you are responsible to learn principles of automotive mechanics.

(2) By working together, paying attention, and applying ourselves, we will satisfy our responsibilities.

c. This module consists of a series of lessons that concentrate on basic fundamentals of automotive mechanics.

(1) Your training will begin with the care and use of tools. This lesson will identify tools that are available to an organizational mechanic and procedures followed by the mechanic to use, maintain and inventory the tools.

(2) The following lesson will teach you to identify, select and repair fastening hardware used in tactical wheeled vehicles.

(3) The next lesson, entitled "Tubing and Tube Fittings," will teach you to identify, select, and use tubing and tube fittings employed in various systems of automotive equipment.

(4) Automotive lubricants is next. This lesson will acquaint you with engine oils, gear lubricants, special lubricants, and hydraulic fluids used in tactical motor vehicles.

(5) The next nine hours of instruction will be devoted to teaching design characteristics and basic principles of operation of automotive components. You will learn how power is developed in the engine and transmitted through various drive train components to the driving wheels.

(6) Next, you will learn serviceability standards for automotive components. This lesson will familiarize you with methods of determining by inspection, whether a particular part is serviceable or unserviceable.

(7) Test equipment is next. Here you will learn to use automotive test equipment to measure drive belt tension, pressure test the cooling system and pressure cap, measure battery specific gravity, check coolant protection level, and check for voltage in an automotive electrical circuit.

(8) Basic automotive electricity will be the next subject. During this lesson, you will be taught the relationship between electrical pressure, flow, and resistance in automotive electrical circuits. You will also be taught how to measure voltage and resistance with a multimeter.

(9) D. C. electrical circuits will be the next lesson. This lesson will introduce you to the Universal Maintenance Training System. You will use simulators to perform diagnostic exercises on simulated automotive electrical circuits.

(10) An introduction to automotive wiring and lighting, followed by splicing and soldering procedures, will be presented next. These two lessons will teach you to trace automotive electrical circuits and how to repair electrical wiring.

(11) Eight hours of training will be dedicated to operating procedures for Simplified Test Equipment for Internal Combustion Engines-Reprogrammable (STE/ICE-R). STE/ICE-R allows the mechanic to perform essential tests and measurements on internal combustion engines and their accessory systems through a diagnostic connector such as those used in hi-tech automotive repair shops.

d. If your class is scheduled for classroom instruction, you are required to be seated at your assigned desk before the scheduled convening time for that period of instruction. If your class is scheduled for practical application training or performance testing, you are required to be at your assigned work station by the time training is scheduled to begin.

2. TRAINING FACILITY

a. We have two break areas. This one is used during fair weather and is the only authorized smoking area. The other break area is inside these double doors. This area is to be used only during inclement weather. Please deposit your aluminum cans and scrap paper in the containers provided. As you can see, both are clearly labeled.

(1) During classroom instruction, a ten minute break will be provided for each schedule hour of instruction.

(2) During a practical application exercise or performance test, a break will be provided at a convenient time, depending on your progress.

(3) Break time is for using the head. Both male and female facilities are conveniently located next to the indoor break area. Both facilities will be cleaned daily.

b. Fire alarms and fire extinguishers are mounted on walls throughout the building. There are four fire stations located in our area of responsibility. Two students will be assigned to each station.

(1) In the event of a fire or fire drill, students assigned to a fire station will man their stations and await instructions from an instructor or a fire official.

(2) If you discover a fire, sound the word, pull the nearest fire alarm and contact the fire department by dialing 911.

(3) We will attempt to extinguish a fire only if it is small or in an early stage.

(4) Students not assigned to a fire station will close all windows and leave the building through the nearest fire exit. If you are the last person to leave that exit, close the door behind you. Do not turn the lights off.

(5) The class leader will muster the class in the parking area and await instructions.

c. This is classroom #29. Training on basic automotive electricity, test equipment, STE/ICE, wiring, lighting, splicing and soldering will be conducted here.

d. This is the engine laboratory, room #30.

(1) Located in the lab are fifteen functional 6.2 liter diesel engines and work stations. These engines will be used for practical application training and performance testing.

(2) The required technical manuals are located at each work station. These manuals must be used to complete the required maintenance tasks. Do not remove any pages from the TM's. You are encouraged to use the manuals for after hours study. Make sure you return them the following training day.

(3) To prevent injury or equipment damage, do not attempt to crank or start an engine until authorized to do so by an instructor.

(4) While here or any other laboratory, always be safety conscious. It takes only a second to lose a finger to a radiator fan. Also, watch out for oil, grease, or loose tools on the floor.

(5) Another potential hazard is wearing of jewelry. Battery voltage does not discriminate between gold and silver, both get mighty hot.

e. This is one of the simulator laboratories. Here you will use a Universal Maintenance Training System to perform diagnostic exercises on various automotive systems. The panels will respond to tests and inspections same as an actual vehicle would.

f. A student instructional rating form will be used to rate each lesson. Two students within the class will be assigned to complete the form (one on each side of the room) at the end of each period of instruction; the students will give the forms to the instructor.

3. SHOP SAFETY

a. In a few moments I will show an ITV film entitled "Shop Safety." Pay close attention, the information provided can prevent serious injuries or fatal accidents from happening.

b. Show ITV film.

4. DEPLETED URANIUM HAZARD AWARENESS

a. The following ITV film will cover hazards of depleted uranium and how to identify physiological and physical effects of depleted uranium on the battlefield.

b. Show ITV film.

REFERENCE:

Program of Instruction, Automotive Organizational Maintenance Course.